

# Limited value of the standard 8-hour water deprivation test in the diagnostic work-up of patients with suspected diabetes insipidus

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## Background

Diabetes insipidus (DI) is characterized by polyuria and consequently thirst and polydipsia.

Excessive water intake can also cause polyuria, *i.e.* primary polydipsia. It is of utmost importance to differentiate between the two disorders since the treatment is different.

## Purpose

To study the clinical value of the standard 8-hour as well as an extended water deprivation test in patients with polyuria and polydipsia

## Patients and Methods

This was a retrospective, single centre study where results from 117 water deprivation tests performed between 2004 and 2014 were reviewed. The same protocol was used during the entire study period. Consumption of any liquids during the test was strictly prohibited.

Weight, urine osmolality and specific gravity were measured on every occasion the patient urinated throughout the test.

Following criteria were used for termination of the test:

- >3% weight reduction
- Urine specific gravity >1.020 or, urine osmolality >800 mOsm/L
- Intolerable adverse symptoms such as excessive thirst

### Aetiology of polydipsia–polyuria syndrome in 117 patients who performed water deprivation test between 2004 and 2014

Primary polydipsia	96
Diabetes insipidus after pituitary surgery	4
Nephrogenic diabetes insipidus	4
Idiopathic neurogenic diabetes insipidus	4
Other*	9

\* Langerhans cell histiocytosis, Sheehans syndrome, hypophysitis, Wegeners granulomatosis, familial diabetes insipidus.

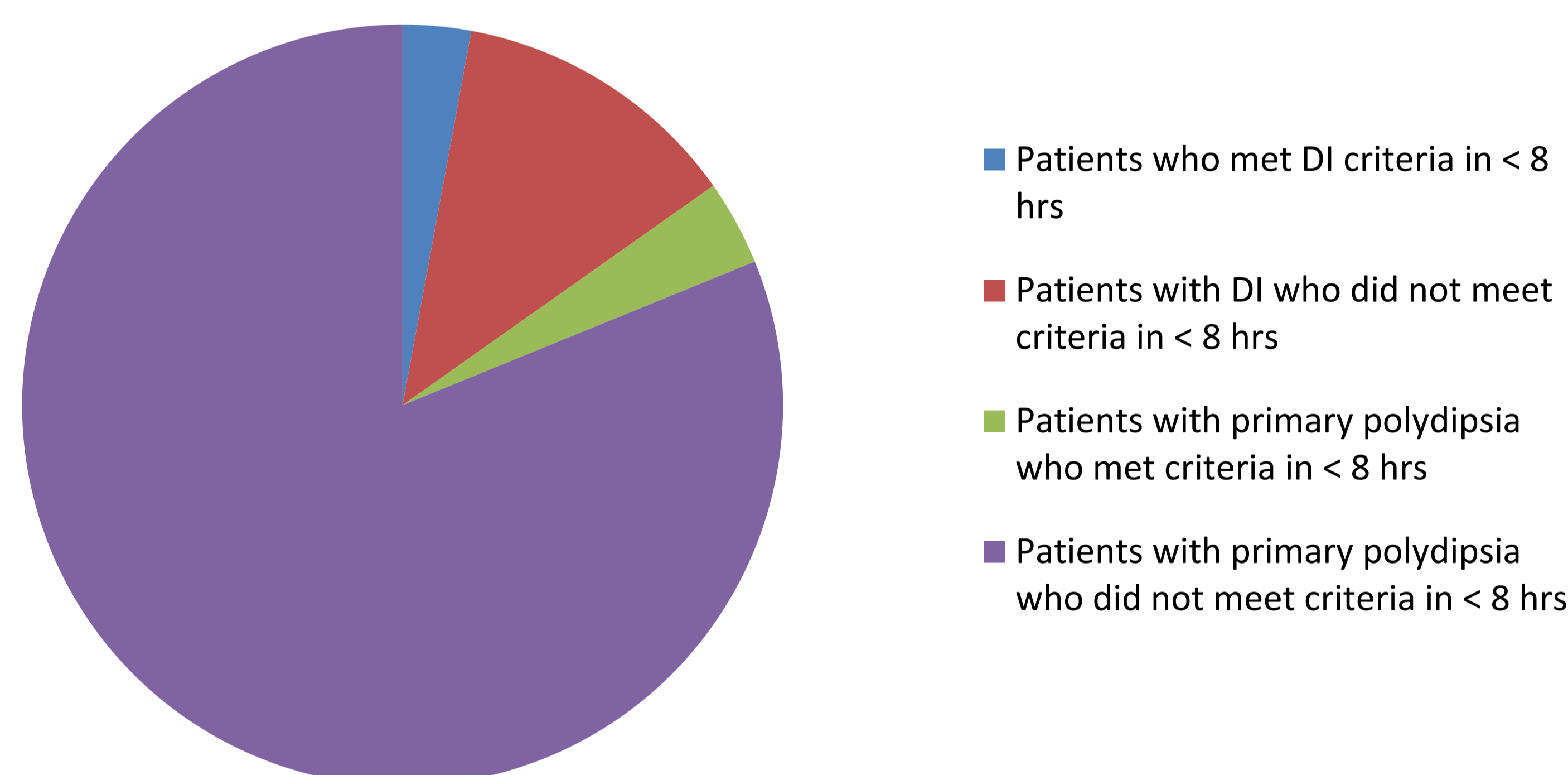
## Results

Of 117 patients (70 women, 47 men), 21 (18%) were diagnosed with DI and 96 (82%) with primary polydipsia.

The median (interquartile range; range) time to termination of the test was 14 hours (10-16; 3-36) in patients with DI and 18 hours (14-24; 7-48) in patients with primary polydipsia ( $P=0.009$ ).

In only 4 (20%) patients with DI and 5 (5%) patients with primary polydipsia the diagnostic criteria were met in less than 8 hours.

Of those diagnosed with primary polydipsia, 26 (27%) did not reach either urine specific gravity >1.020 or urine osmolality >800 mOsm/L.



## CONCLUSION

The standard 8-hour water deprivation test has a limited value in the diagnostic work-up of patients with polydipsia–polyuria syndrome.

Despite an extended test for up to 48 hours, a partial DI may have been missed in as many as one fourth of the patients diagnosed with primary polydipsia.

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